

## REMARKS

### Objections

The applicant has amended claims 7 and 11 curing the Office's objections to these claims. Claim 23 has been cancelled.

### Claims Rejections - 35 USC §102(b)

The Office rejected claims 1-4, 7, 10, 12-21 under 35 U.S.C. 102(b) as being anticipated by Knauer (US 3,520,110). The applicant has carefully reviewed the '110 reference and respectfully disagrees. In the interest of further clarifying the claimed invention, the applicant herein submits new claim 24, clarifying the invention, from which claims 2-22 now depend either directly or indirectly, claims 1 and 23 are cancelled. The applicant respectfully submits, and the Office seemingly acknowledges, the '110 reference fails to disclose a plasma processing apparatus. Likewise, in contrast to the claimed invention, the cited '110 reference fails to disclose a plasma, instead using upon a mercury vapor (col. 2, l 28.).

The cited '110 reference fails to disclose use of an alternating electrical potential generated by an Radio Frequency signal, instead, it uses a DC voltage source.

In contrast to the claimed invention, the '110 reference concerns a method for introducing gas or vapour to an electrically powered object without having an electrical breakdown in the feed pipe. It consists of several insulating pipes alternating in series with conductive pipes together with a means of dividing the applied voltage between the insulators. This method refers primarily to DC voltage and uses resistive dividers to manage the voltage, either as external components or through a small leakage current through the insulating members.

The applicant has addressed the problems relating to the use of an alternating electrical potential where particularly at radio frequencies voltage division by leakage resistors is ineffective

because of the inductance of the resistors. The use of the mesh/gauze (claim 10) combines the electrical requirements for a conductive member of sufficient plane area to form the capacitor with multiple flow paths with little obstruction to the gas flow. Theory has shown that a mesh behaves like a full metal plate at distances large compared to the mesh openings.

In contrast to the cited '110 reference the claimed invention is suitable particularly for high frequency alternating voltages where capacitive division is more effective. There is no reference to a capacitive divider in the '110 reference.

The Office will also note that in the '110 reference steel wool is used for a different function, to quench insipient discharges and to prevent charged particles from propagating to the next section. Metal wool could be used in the claimed application, however, it would be used for a different function. Namely to reduce the local peak voltage by acting as a capacitive divider and not to provide a tortuous and quenching path for ionised gas as in the prior art.

The applicant therefore submits that at least for the forgoing reasons, claim 24 and those claims dependant therefrom are patentably distinct from the cited '110 reference, and the applicant respectfully requests that the Office issue a timely notice of allowance.

#### **Claim Rejections – 35 USC § 103**

The Office has quoted the statute from 35 USC 103(a), which is referenced herein. The Office has rejected claim 22 as being unpatentable over Knauer. Applicant has carefully considered the Office rejections and respectfully submits that the amended claims, as supported by the arguments herein, are distinguishable from the cited reference. In addition to those remarks made above with regard to the '110 reference, which apply with equal force to claim 22 as indirectly dependant from claim 24, the applicant notes that the cited reference was granted in 1970. In the ensuing years, if it were truly obvious to one of ordinary skill in the art to modify the

'110 reference to obtain the claimed invention of claim 22, one would expect that such a modification would be known in the art. No such reference has been provided by the Office.

Therefore, at least for the above cited reasons, the Applicant respectfully submits that the claimed invention of claim 22 is not rendered unpatentable by the cited '110 reference.

The Office has rejected claims 5, 6, 8, 9 and 11 as being unpatentable over Knauer (US 3,520,110) in view of Kawakami et al. (US 5,542,559). The Applicant has carefully reviewed the cited references and respectfully disagrees. The applicant has discussed the inadequacy of the '110 reference with regard to claim 24 and its dependant claims, and notes that the '559 reference fails to supply these inadequacies.

In contrast to the claimed invention, the cited '556 does not disclose a stack of alternating dielectric and electrically conductive members as required in claim 24 and its dependant claims. The cited '559 reference uses a stack of insulators followed by a stack of conductors. This is fundamentally different to the feature required in the claimed invention. Column 8, lines 55 to 65 of '559 reference makes it clear that the stack of conductors of similar external dimension is an engineering convenience allowing additional insulating members to be substituted if the members 6, 7 do not provide the isolation required. There is no attempt to divide the voltage across the available insulators, in contrast to the claimed invention where a capacitive divider reduces the peak voltage at any point in the gas flow path. The applicants have also attempted to utilise an arrangement similar to that used in '559 but deemed it inadequate because of the repeated failure of that method to resist breakdown. The present application resists breakdown to significantly higher voltages and is a significant advance of the disclosure of this document.

The cited '559 reference uses a tortuous gas path with no line-of-sight flow path together with multiple parallel paths to reduce the flow impedance. The method used in the '559 reference is significantly less effective than the capacitive divider method used in the present application. It is not obvious to arrive at the use of a capacitive divider instead of a resistive divider in combination with the tortuous path.

The applicant submits that at least for the foregoing reasons, claims 5, 6, 8, 9 and 11 are patentably distinct from the cited references, either alone or in combination, and respectfully request that the Office's rejection be withdrawn.

The Office has rejected claim 23 as being unpatentable over Kawakami et al. (US 5,542,559) in view of Knauer (US 3,520,110). Again, the applicant has carefully reviewed the cited references and respectfully disagrees with the Office's rejections. Claim 23 has, however, been cancelled. The Applicant respectfully submits that this cures the Office's rejection.

Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance. No new matter is added. Applicant requests speedy reconsideration, and further requests that Examiner contact its attorney by telephone, facsimile, or email for quickest resolution, if there are any remaining issues.

Respectfully submitted,

**/Andrew P. Cernota, Reg. No. 52,711/**

Cus. No. 24222  
Vern Maine & Associates  
PO Box 3445  
Nashua, NH 03061-3445  
Tel. No. (603) 886-6100, Fax. No. (603) 886-4796  
patents@vernmaine.com

Vernon C. Maine, Reg. No. 37,389  
Andrew P. Cernota, Reg. No. 52,711  
David A. Rardin, Reg. No. 52,153  
Attorneys/Agents for Applicant